

Patent claims

1. An optoelectronic component (1) having a semiconductor arrangement (4) which emits and/or receives electromagnetic radiation and which is arranged on a carrier (22) which is thermally conductively connected to a heat sink (12), and having external electrical connections (9) which are connected to the semiconductor arrangement (4),  
characterized in that  
the external electrical connections (9) are arranged in electrically insulated fashion on the heat sink (12) at a distance from the carrier (22).
2. The optoelectronic component as claimed in claim 1,  
characterized in that  
the carrier contains a carrier substrate (2) and at least one electrically insulating layer (14) arranged thereon.
3. The optoelectronic component as claimed in claim 1 or 2,  
characterized in that  
the semiconductor arrangement (4) and the electrically insulating layer (14) have an electrically conductive layer (13) arranged between them which is connected to one of the external electrical connections (9).
4. The optoelectronic component as claimed in one of claims 1 to 3,  
characterized in that  
the semiconductor arrangement contains a semiconductor chip.

5. The optoelectronic component as claimed in one of  
claims 1 to 4,  
characterized in that  
the external electrical connections (9) include  
5 conductor tracks on a printed circuit board.
6. The optoelectronic component as claimed in one of  
claims 1 to 5,  
characterized in that  
10 conductor tracks on different printed circuit  
boards arranged above one another can be connected  
to one another by means of plated-through holes.
7. The optoelectronic component as claimed in one of  
15 claims 2 to 6,  
characterized in that  
the carrier substrate (2) has at least one  
material with good thermal conductivity from the  
group comprising Si, diamond-coated Si, diamond,  
20 SiC, AlN and BN.
8. The optoelectronic component as claimed in one of  
claims 2 to 7,  
characterized in that  
25 the electrically insulating layer (14) comprises  
SiO<sub>2</sub>.
9. The optoelectronic component as claimed in one of  
claims 1 to 8,  
30 characterized in that  
the semiconductor arrangement (4) is attached to  
the carrier (22) by means of a metal solder or a  
thermally and/or electrically conductive adhesive.
- 35 10. The optoelectronic component as claimed in one of  
claims 1 to 9,  
characterized in that

the carrier (22) is attached to the heat sink (12) by means of a metal solder or a thermally conductive adhesive.

- 5 11. The optoelectronic component as claimed in one of  
claims 1 to 10,  
characterized in that  
the semiconductor arrangement (4) and the carrier  
10 (22) are arranged in the cavity (3) of a basic  
housing (20).
12. The optoelectronic component as claimed in claim  
11,  
characterized in that  
15 the cavity (3) of the basic housing (20) contains  
precisely one semiconductor arrangement (4).
13. The optoelectronic component as claimed in claim  
11 or 12,  
20 characterized in that  
the basic housing (20) is formed at an angle on  
the inner side (17) which faces the semiconductor  
arrangement (4), so that the basic housing (20)  
has a reflective area for a portion of the  
25 radiation emitted by the semiconductor arrangement  
(4).
14. The optoelectronic component as claimed in one of  
claims 11 to 13,  
30 characterized in that  
the cavity (3) between the semiconductor  
arrangement (4) and lateral walls (17) of the  
cavity contains a reflective filling compound (6)  
which, as seen from the semiconductor arrangement  
35 (4) toward the front (21) of the basic housing  
(20), has a concave surface (30) which forms a  
reflective area for a portion of the radiation.

15. The optoelectronic component as claimed in one of  
claims 1 to 14,  
characterized in that  
the filling compound contains  $\text{TiO}_2$  or an epoxy  
resin filled with  $\text{TiO}_2$  particles.
16. The optoelectronic component as claimed in one of  
claims 1 to 15,  
characterized in that  
the semiconductor arrangement (4) is at least  
partly encapsulated by a radiation-pervious  
encapsulation compound (6).
17. The optoelectronic component as claimed in one of  
claims 11 to 16,  
characterized in that  
at least some of the external connections (9) are  
arranged between the basic housing (20) and the  
heat sink (12).
18. The optoelectronic component as claimed in one of  
claims 11 to 17,  
characterized in that  
it is provided for an electrical power consumption  
of at least 0.5 W.
19. The optoelectronic component as claimed in one of  
claims 11 to 18,  
characterized in that  
it is provided for an electrical power consumption  
of at least 1 W.
20. The optoelectronic component as claimed in one of  
claims 11 to 19,  
characterized in that  
it is provided for an electrical power consumption  
of at least 3 W.

21. The optoelectronic component as claimed in one of  
claims 11 to 20,  
characterized in that  
it has a base area of no more than 1 cm<sup>2</sup>.
- 5
22. A component-based module,  
characterized in that  
it has a plurality of optoelectronic components  
(1) as claimed in one of claims 1 to 21.
- 10
23. A component-based module having a plurality of  
optoelectronic components as claimed in one of  
claims 1 to 21,  
characterized in that  
at least some of the optoelectronic components are  
15 electrically conductively connected to one another  
by conductor tracks.
24. The component-based module as claimed in claim 22  
20 or 23,  
characterized in that  
the individual optoelectronic components (1) are  
arranged in the form of a matrix and at least some  
of them are connected in series.
- 25
25. The component-based module as claimed in one of  
claims 22 to 24,  
characterized in that  
a plurality of optoelectronic components (1) each  
30 have a basic housing (20).